HPE Digital Learner Integrating Veeam Content Pack

This content pack covers Veeam backup and replication software in context of integrations with HPE Primera, HPE 3PAR, HPE Nimble and HPE StoreOnce products. It includes an introduction and review of Veeam, HPE Primera, HPE 3PAR, HPE Nimble, and HPE StoreOnce concepts that are important to know before working with Veeam integrations with HPE products. It also covers theory and features available in Veeam when combined with HPE products, including network-attached storage (NAS) and HPE StoreOnce Catalyst integration, local and remote copy integrations, backup and recovery flow, verification and best practices. The content pack includes hands-on labs using Veeam with HPE Primera, HPE 3PAR and HPE Nimble storage arrays, and HPE StoreOnce backup appliances.

The HPE Digital Learner Integrating Veeam Content Pack has two components:

- Web-based training, available online.
- Hands-on labs, available through HPE vLabs

You enjoy access to the self-paced, web-based portion of the training as part of your HPE Digital Learner subscription service. The content of this training is identical to the instructor-led version of this course. During your access period, you can repeat sections of the training for reinforcement—getting the training you need at your own pace and on your own schedule.

To run the labs associated with this course, you have access to the HPE vLabs environment for two (2) sequential days. The environment includes HPE Primera, HPE Nimble, HPE 3PAR arrays, and HPE StoreOnce appliances.
**Audience**

Customers, HPE services field engineers, call center personnel, presales and channel partners, and other field personnel who provide installation and/or operational support assistance.

**Prerequisites**

Before attending this course, students must have:

- Basic VMware® vSphere® administration experience
- Basic understanding of iSCSI, fibre channel, backup, and SAN technologies
- Basic knowledge of Veeam
- Basic knowledge of at least one of the following
  - HPE Primera
  - HPE 3PAR
  - HPE Nimble
  - HPE StoreOnce

**Content Pack objectives**

After completing this course, students will be able to:

- Describe the core components of Veeam
- List Veeam backup and recovery capabilities
- Describe local and remote replication features of HPE Primera, HPE 3PAR, and HPE Nimble storage arrays
- Talk about Veeam integrations with HPE storage arrays (HPE Primera, HPE 3PAR and HPE Nimble), including advantages
- Describe HPE StoreOnce basics
- List types of HPE StoreOnce backup targets—VTL, NAS, HPE StoreOnce Catalyst
- Discuss deduplication technology
- Explain VTL and NAS replication and HPE StoreOnce Catalyst copy
- Plan, configure and perform Veeam backup and recovery by using HPE storage and backup products
- Configure backup replication (local and remote)
Module 1: Veeam Introduction/Review

- Components
  - Core components
  - Data transfer scheme
  - Veeam Backup Server
  - Veeam Backup Proxy (VMware)
  - Veeam Backup Proxy (Microsoft Hyper-V)
  - Direct storage SAN access mode (VMware)
  - Direct storage NFS access mode (VMware)
  - Virtual appliance mode (VMware)
  - Network mode (VMware)
  - Veeam backup repository
  - WAN acceleration
- Backup
  - Full backup
  - Incremental backups
  - Reverse incremental backup
  - Forward incremental backup
  - Forever forward incremental versus forward incremental backup
  - Active full and synthetic full
  - Backup copy
  - Backup copy overview
  - Replication (VMware)
  - Agent backup
  - NAS backup

Module 2: HPE Primera/HPE 3PAR Replication

- HPE Primera/HPE 3PAR local replication
- HPE Primera/HPE 3PAR snapshot
- HPE Primera/HPE 3PAR virtual copy
- HPE Primera/HPE 3PAR clone
- HPE Primera/HPE 3PAR remote replication
- HPE Primera/HPE 3PAR remote copy
  - FC-based remote copy
  - Native IP-based remote copy
  - Remote copy terminology

Module 3: Nimble Replication

- HPE Nimble local replication
- HPE Nimble snapshot
- Snapshot life cycle
- Volume collections and schedules
- HPE Nimble zero copy clones
- Recovery scenarios using local replication

Module 4: HPE Nimble remote replication

- Replication components
- Partner
- Replication QOS—bandwidth limit
- How replication works—the basics
- Volume collection schedules—more information
- Replication and deduplication notes
### Module 4: Veeam and HPE Storage Integration

- **HPE storage integration**
  - Common VADP agentless backup process (vStorage API—Data Protection)—overhead
  - Storage integration—standard backup
  - Comparison—overhead of standard VMFS snapshots compared to hardware snap
  - Storage integration introduction
  - Veeam integration with HPE primary storage
  - Leverage on HPE storage snapshots
  - Veeam backup job from HPE primary storage snapshots process overview—VEEAM advantage
  - Storage integration—backup with Veeam snapshot integration
  - Benefit of using hardware snapshots (HPE 3PAR, HPE Primera, HPE Nimble) for backup
  - VMware VM snapshot challenges summary
  - Storage integration versus traditional approach summary
  - Veeam supports direct connectivity to HPE primary storage
- **Veeam and HPE storage features**
  - HPE 3PAR/HPE Primera snapshot orchestration
  - Backup from HPE 3PAR/HPE Primera replicated storage snapshots
  - Nimble snapshot orchestration and replication over WAN
  - Backup from HPE Nimble snapshots on the secondary array
  - How to configure snapshot-only jobs
  - Configuring snapshot and backup-file in a single job
  - Summary view—Veeam snapshot orchestration with HPE 3PAR/HPE Primera
  - Instant VM Recovery from HPE storage snapshot
  - Traditional restore via LAN
  - Faster restore via SAN
  - How to improve restore speed—more technical details
  - Veeam On-Demand Sandbox/DataLabs from HPE storage snapshot
  - Veeam Explorer for storage snapshots
  - Restore application items from storage snapshots
  - HPE Recovery Manager Central
  - Backup policy including storage snapshots
  - Veeam supports HPE 3PAR and HPE Nimble VVOLs for VMware vSphere

### Module 5: HPE StoreOnce Review

- **What is StoreOnce?**
- **HPE StoreOnce backup systems**
- **StoreOnce—emulation types**
- **Virtual tape libraries**
- **NAS shares**
- **HPE StoreOnce interfaces—traditional NAS/VTL**
- **HPE StoreOnce Catalyst**
  - Which benefits does HPE StoreOnce Catalyst deliver?
  - HPE StoreOnce interfaces with HPE StoreOnce Catalyst
- **Deduplication**
  - Deduplication—what is it?
  - HPE StoreOnce deduplication
  - Deduplication data locality
  - Typical deduplication ratios
  - HPE StoreOnce appliance architecture
  - HPE StoreOnce Catalyst ISV integration
  - Source/server side HPE StoreOnce Catalyst deduplication
- **HPE StoreOnce replication**
  - Replication of VTL and NAS shares
  - Replication granularity
  - HPE StoreOnce replication deployment options (VTL/NAS)
  - Appliance fan-out
  - Appliance fan-in
  - HPE StoreOnce Catalyst copy
  - HPE StoreOnce Catalyst—ISV-controlled replication
  - HPE StoreOnce Catalyst Copy deployment options
  - Seeding the replication target
Module 6: Veeam and HPE StoreOnce Integration

- Veeam and HPE StoreOnce integration components
- HPE StoreOnce—Veeam basics
- HPE StoreOnce deployment
- HPE StoreOnce and Veeam with NAS integration
- HPE StoreOnce and Veeam with HPE StoreOnce Catalyst integration
- Suggested architectural design
- Support for deduplicating storage systems
- HPE StoreOnce Catalyst and Veeam agents for Windows and Linux servers
- Veeam agents for Windows—backup repository setting
- Veeam and HPE StoreOnce Catalyst features
  - Benefit of HPE StoreOnce deduplication for Veeam’s repositories
  - Multistreamed write (per VM backup file)
  - HPE StoreOnce—deduplication across VMs and jobs
  - Virtual synthetic full—fast full backup with Catalyst
  - Instant VM recovery and HPE StoreOnce
  - SureBackup and HPE StoreOnce
  - Ransomware and data protection (backup)
  - Ransomware and data protection (backup)
  - Immunize your backup repository against viruses
- Backup replication
  - Veeam backup replication
  - Option 3—traditional Veeam backup replication process
  - Option 2—direct HPE StoreOnce Catalyst write over WAN
  - Veeam and HPE StoreOnce Catalyst over WAN
  - Option 1—Veeam-managed HPE StoreOnce Catalyst copy
  - HPE StoreOnce Catalyst copy “replication” models
  - HPE StoreOnce backup to tape from the central replica hub
  - Cloud volumes backup support
  - Cloud volumes backup
  - Set it and forget it
  - Backup and restore
- Summary
  - Data migration from any legacy storage to StoreOnce
  - HPE and Veeam—integration summary
### Detailed lab outline

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Exercise 2: Provision and present storage on 3PAR/Primera array  
Exercise 3: Connecting volume to ESXi, creating a new datastore and migrating VMs via vSphere Web Client |
| Lab 1b: Initial Storage Preparation | Exercise 1: Provision and present storage on HPE Nimble array  
Exercise 2: Connecting volume to ESXi, creating a new datastore and migrating VMs |
| Lab 2a: 3PAR/Primera Remote Replication Preparation | Exercise 1: Configure a Remote Copy Group between 3PAR/PE Primera arrays |
| Lab 2b: Remote Replication Preparation | Exercise 1: Configure a replicated volume collection |
| Lab 3a: Initial Veeam Preparation | Exercise 1: Log on to Veeam backup software  
Exercise 2: Configure VMware vCenter® in Veeam  
Exercise 3: Configure a HPE 3PAR/HPE Primera array in Veeam |
| Lab 3b: Initial Veeam Preparation | Exercise 1: Log on to Veeam backup software  
Exercise 2: Configure VMware vCenter in Veeam  
Exercise 3: Configure an HPE Nimble array in Veeam |
| Lab 4a: Creating Backups Using Veeam and 3PAR/Primera | Exercise 1: Configure Veeam backup for vSphere  
Exercise 2: Add FC backup proxy host to HPE 3PAR/HPE Primera  
Exercise 3: Check status of the volumes and snapshots on the array  
Exercise 4: Back up a virtual machine by using Veeam and array snapshots  
Exercise 5: Monitor the snapshot |
| Lab 4b: Creating Backups Using Veeam | Exercise 1: Configure Veeam backup for vSphere  
Exercise 2: Check status of the volumes and snapshots on the array  
Exercise 4: Back up a virtual machine by using Veeam and array snapshots  
Exercise 5: Monitor the snapshot on the array |
| Lab 5a: Virtual Machine Instant Recovery with 3PAR/HPE Primera | Exercise 1: Check status of array volumes  
Exercise 2: Verify the vSphere configuration  
Exercise 3: Start instant recovery  
Exercise 4: Check status of array snapshot  
Exercise 5: Verify the recovered VM in vSphere  
Exercise 6: Start migration to the production volume |
| Lab 5b: Virtual Machine Instant Recovery | Exercise 1: Check status of array volumes  
Exercise 2: Verify the vSphere configuration  
Exercise 3: Start instant recovery  
Exercise 4: Check status of array clone  
Exercise 5: Verify the recovered VM in vSphere  
Exercise 6: Start migration to the production volume |
| Lab 6: Granular File Level Restore with HPE 3PAR/HPE Primera | Exercise 1: Make a granular file level restore |
| Lab 7a: Backing Up From a Secondary HPE 3PAR/HPE Primera Storage | Exercise 1: Add FC backup proxy host to a second HPE 3PAR/HPE Primera  
Exercise 2: Configure a target HPE 3PAR/HPE Primera array in Veeam  
Exercise 3: Create a backup from storage replica job  
Exercise 4: Run a backup from storage replica job |
| Lab 7b: Backing Up From a Secondary Storage | Exercise 1: Configure a target HPE Nimble array in Veeam  
Exercise 2: Create a backup from storage replica job  
Exercise 3: Run a backup from storage replica job |
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